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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

DAVIS, D

ART UNIT

PAPER NUMBER

2754

DATE MAILED:

06/22/99

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/940,020

Applicant(s)
Hideaki et al

Examiner
David D. Davis

Group Art Unit
2754



☒ Responsive to communication(s) filed on Apr 7, 1999

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-78 is/are pending in the application.

Of the above, claim(s) 1-20, 24, 25, 27-46, 49-59, 66, and 76 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 21-23, 26, 47, 48, 60-65, 67-75, 77, and 78 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Election/Restriction

1. Claims 1-20, 24, 25, 27-46, and 49-58 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species, the requirement having been traversed in Paper No. 4, filed September 28, 1998.
2. Newly submitted claims 59, 66 and 76 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The claims submitted are *not* directed to Species VII provisionally elected September 28, 1998

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 59, 61, 66 and 76 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Drawings

3. The corrected or substitute drawings were received on April 7, 1999. These drawings are approved by the examiner.

Claim Rejections - 35 U.S.C. § 112

4. Claims 60, 67 and 77 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled

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in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, "an underlayer having a thickness of 50 nm or less", includes every thickness up to zero. The specification fails to enable a skilled artisan how to make and/or utilize an underlayer having a thickness approaching zero.

Claim Objections

5. Claims 69 and 70 are objected to because of the following informalities: In line 4 of claim 69, "bine" should be --being--. In line 7 of claim 70, "ans" should be --and--. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 21-23, 26, 47, 48, 60-65, 67-75, 77 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krounbi et al (US 5,018,037) in view of Chen et al (US 5,733,370). 70, Krounbi et al shows in figure 3d substrate 21 having a main surface. Magnetoresistive (MR) effect film 27 of Krounbi et al is formed on the main surface of substrate 21 and has a magnetic field detecting portion. The pair of hard bias magnetic field applying films 26 of Krounbi et al are disposed adjacent to both edge portions of the magnetic detecting portion. In column 2, line 56 through column 3, line 11, Krounbi et al discloses that bias magnetic field applying films 26 have hard magnetic films containing cobalt (Co) as a structural element considered to have a residual magnetization M_r of 650 emu/cc.

Krounbi et al also shows in figure 3 hard magnetic film 26 containing Co as a structural element and it is considered to have Co(110) crystallographic orientation oriented perpendicular to the surface. Krounbi et al additionally discloses in column 2, line 56 through column 3, line 11 that hard magnetic film 26 is composed of CoPt or CoCrPt. Bias magnetic field applying films 26 are shown in figure 3d to be abutted against MR effect film 27.

However, Krounbi et al is silent as to bias magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element being a bi-crystal structure. Krounbi et al is also silent as to upper and lower shields in a combined or merged head having

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poles. Krounbi et al is additionally silent as to the a spin valve film and an amorphous underlayer.

Chen et al discloses column 3, lines 37-50 magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element being a bi-crystal structure, and official notice is taken of the fact that upper and lower shields in a combined or merged head having poles, spin valves and an amorphous underlayer are notoriously old and well known in the magnetic head art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the cobalt magnetic field applying films having hard magnetic films containing cobalt (Co) as structural element of Krounbi et al with a bi-crystal structure as taught by Chen et al.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element with a bi-crystal structure to suppress Barkhausen noise in the magnetic head. See column 3, lines 37-50 of Chen et al.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic read MR head of Krounbi et al with upper and lower shields in a combined or merged head having poles as taught in the art.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic read MR head with upper and lower

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shields in a combined or merged head having poles so recording can take place, as well as reproducing.

It additionally would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic head of Krounbi et al with an amorphous underlayer and a spin-valve layer as taught in the art.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic head with an amorphous underlayer and a spin-valve layer so as to provide a magnetic read head able to read a high density on a magnetic recording medium.

Response to Arguments

8. Applicants' arguments filed April 7, 1999 have been fully considered but they are not persuasive. Applicants assert on pages 10 and 11 that Chen discloses a medium and Krounbi et al discloses a magnetic head. Therefore, there is no suggestion that the film of Chen can be utilized in Krounbi et al. The fact that Chen discloses a medium does not preclude the utilization of *a film* in a different, yet related device. And as stated above, a skilled artisan would have been motivated to provide the layer of Chen in the device of Krounbi et al is to suppress Barkhausen noise. Noise, as disclosed by Chen, is a concern in recording mediums and it is a concern in magnetic heads, as well. The fact that it takes the form of Barkhausen noise in a head does not lessen the need of noise reduction.

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Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503.

A handwritten signature in black ink, appearing to read 'D. Davis', is written over a horizontal line.

David D. Davis
Primary Examiner
June 21, 1999